

9 / The Fate of Progress

THE CONCEPT of progress is often confused with that of development. We speak of "underdeveloped" nations and mean countries which still have to develop by assimilating the progress made by Western civilization. We speak of the progress of science and in the same sense of its development. Hegel even asserts that truth has the tendency "to develop," i.e., to unfold in the history of the spirit. Since this process leads to increasingly complex and higher stages, Hegel calls this principle of history, in which reason develops in the world, "progress" in the consciousness of freedom.

Both development and progress have the formal structure of becoming rather than of static being. Development and progress, as forms of becoming, are directed towards the future. Both concepts would be unnecessary in a time that had no future, in an eternally recurring present. Hence, progress is a movement toward something in the future, but for that reason alone not every becoming and not every development is progress. The flowing waters of a river's course move toward an end but the river does not make progress. All organic life develops toward some end but it makes no progress. The seed of a plant develops and becomes a tree; a fertilized egg becomes a fully developed animal; a human embryo becomes a mature human being; and the changes which occur in these processes of growth are often so great that the original form of the creature can scarcely be recognized in the final stage.

This natural process of growth and change does not continue endlessly with ever novel variations, but has its specific end in every mature member of a species. A fully developed organism has attained the natural end of its growth; it has become that

which it was in germ from the beginning. This end towards which a living creature naturally develops is the final cause of its first changes. The purpose behind its growth directs and regulates in advance its entire evolution and also awakens the energies that are required for its full development. If a certain seed were not predisposed to become a beech tree, then it would not follow one particular pattern of development rather than another.

Even the history of the evolution that led from single-celled creatures to man represents for the most part progress only if the increasing differentiation of biological organization and the formation of a central nervous system with a brain is taken as a standard. Furthermore, in this case the supposed continuity of biological evolution must be interpreted teleologically, as if all of nature had aimed from the very beginning toward man. This schema of historical development, however, ignores the fact that many highly differentiated species of animals have already become extinct and that even the human animal would disappear if the geological conditions of life were to change. At any rate, the emergence of man cannot be understood as the result of an uninterrupted descent without mutation from the animals any more than as the result of a unique and divine creation. Only man, in contrast to all non-human organisms, can relate himself to his own existence; he can accept it or reject it. He must, however, will his own life because he can also destroy himself. Therefore, he cannot simply "develop"; he must begin to do things on his own very early so that he can become a human being. The first achievements essential for human development involve learning to walk and talk. These must be accomplished first so that man can learn to work and to teach himself how to produce other things. Man and only man cultivates nature and in this way cultivates himself.

It is, of course, true that man is also a human animal that through becoming acquires his own particular being, like all other living things. He develops from a fertilized egg to birth, from infancy to puberty, which is the natural end of growth. Upon reaching puberty, he is considered an adult. However, the biologically mature individual is not *eo ipso* a fully developed and mature person. Most of us remain grown-up children throughout our entire lives, immature and infantile. It is obvious that natural development does not suffice for becoming human, that to become human we must make our own way through life, our own progress. Progress in the individual development of man and in the overall

changes in the history of mankind, however, does not lead to any natural perfection. Progress never realizes its purpose. It must always go forward and its final end cannot be foreseen.

The whole of this imperfectible human history is based upon the fact that man does not leave nature as it is, but cultivates the earth by working on it, changing its natural character, domesticating wild animals. All progress, then, is originally a progress in the appropriation of nature, in which man takes control of nature. Culture does not take form from within (*hap' automaton*) like *physis*; it is a result of a human advance beyond nature and away from it. This sort of progress in the cultivation of nature is brought about by human art or skill. Artifice, however, is as natural to man as the automatic processes of organic life, because he cannot live a human existence without cultivating his environment and thus cultivating himself. No matter how great the difference between the most elementary cultivation of nature with primitive instruments and the most modern technical machine production, there is, in principle, no difference, for progress—the movement beyond nature and away from nature—belongs, fundamentally, to the nature of man.

The original history of man in which progress first occurs does not begin with recorded history, but in pre-history, in the remote past when man first came into existence as man. Lucretius' description of progress is no different from Herder's in his *Ideas on the History of Humanity*. Progress, along with its corresponding retrogression, belongs only to the history of human life. If this progress in the cultivation of nature and of himself, which is natural to man, attains its aim and reaches a relative stopping point, then it is referred to as completion or perfection. This completion or perfection, however, is not absolute but relative, for two reasons: first, because the standards of perfection vary according to the basic tendencies of a culture, and second, because only an imperfect creature like man is also perfectible. An absolutely perfect being, such as God, cannot perfect himself in a progressive way, for if he could then he would not already be perfect. And even a natural creature that simply is what it is and cannot become other than what it is, in its own way, is also perfect.

Man, because he is capable of so much, is imperfect and therefore so are his works. A suspension bridge, produced by human technical skill, can always be improved and perfected still further. The threads which spiders have spun with their own

bodies for millions of years, always in the same way, from which to suspend themselves and their webs, are neither capable of improvement nor in need of it. The ultimate that a work of human skill can achieve, be it a building or poem or painting, is the appearance that it could not be otherwise, as if it were a work of inner natural necessity that could not be improved. However, as a product of human will and capacity, it could be other than it is; in fact, it could just as well not exist as exist. To this extent then, works of human skill fall short of nature because all human capacities are subject to further progress.

Possible advances toward a relative perfection, therefore, are an integral part of the history of human existence. They are relevant to all definite particular advances. Nor do these possible advances rest upon a belief in progress; they are no illusion, but an undeniable phenomenon of human history. However, they do not indicate that history as such and on the whole is a continual movement forward in the sense of a purposive progress.

Lucretius, in the fifth book of *On the Nature of Things*, tracing the natural history of the world, describes first the evolution of life and earth and finally human life. Man belongs in this natural history because he too is produced by the earth, and the earth, though still relatively young, together with the heavens, will not remain as it is forever, but, having originated in time, must also some day pass away. The cultural progress of the human race falls under this supreme law of growth and decay in nature. Man has gradually progressed in the course of time (*paulatim progrediens*)—in the arts of agriculture and navigation; in the construction of cities and the formulation of laws for society; in the refinement of the comforts of life; in the arts of painting and poetry, “until the highest point is reached in all the arts.” But for Lucretius, this progress in the development of the human race does not prove that the condition of man becomes progressively better and better. For all new achievements also bring new dangers and evils. *Ergo hominum genus incassum frustra laborat*: “So the race of man toils fruitlessly and wastes its life in idle cares.” Man does not know how to control his greed or to observe the limits of genuine desire. “It is this inability that in time drove the life of man out upon the sea and aroused the powerful waves of war.”

This classical view of progress is confirmed in its sober truth by the description of the Athenian plague in which all hope of further progress is destroyed and which closes the didactic poem.

Death is the absolute limit of all mortal being and Lucretius regards heaven and earth as mortal, too, for in their present form they will pass away.

A whole world, the world of the Christian tradition, separates the classical view of progress from all post-Christian philosophies of history which aim at fulfillment and perfection. F. Schlegel very strikingly expressed the Christian origin of our progressive thinking and acting: "The revolutionary desire to realize the kingdom of God is the elastic starting point of our whole progressive civilization and of the beginning of modern history." The desire is revolutionary because it reverses the originally natural sense of *re-volutiones*, that is, the orderly revolving of celestial bodies. All post-Christian civilization is progressive because it has continually secularized the theology of history; this movement can be traced from Augustine's *procursus* to the kingdom of God, through Hegel's progress towards the freedom of consciousness, to Marx's expectation of a kingdom of freedom on earth. Whoever sees the events of history from the perspective of a future which is directed toward progress, including even a progressive decay, will see in the past only the preparatory stages of a pre-history that has not yet been fulfilled. Just as the Old Testament was, for the Fathers of the Church, an evangelical preparation (*praeparatio evangelica*) and a promise for the future which had been fulfilled by the New Testament, so the interpretation of the past becomes a retrospective prophecy and the past comes to be understood as a meaningful preparation for the future.

The Christian faith in an ultimate fulfillment, it is true, has disappeared from the modern historical consciousness. However, faith in the future as such and in some indefinite consummation has remained dominant. A devotional book of the seventeenth century, John Bunyan's *The Pilgrim's Progress*, describes in allegorical form the progress of the pilgrim, namely, "from this world to that which is to come." But in the same century, the world to come began to be understood, not as a kingdom of God beyond this world and its history, but as a kingdom of man, a better world in the future. The other-worldly destiny of man gave way to a worldly purpose. Man no longer "transcended" to God as the *summum bonum* but to a human world capable of improvement. The radical philosophies of progress of Condorçet, Saint-Simon, Comte, and others, whose common idea is the progress of "science," i.e., of mathematical physics, are not alone in their orientation toward the future. The same orientation is found

in the transformation of these philosophies into theories of decay which look upon progress as something negative and which interpret the entire history of Europe as a single, consistent development of a "nihilism" which will be consummated in an "age of complete absurdity."

Rousseau had already questioned in principle the idea of progress, which was to dominate the historical thinking of the eighteenth and nineteenth centuries. A century later, Leopardi, Flaubert, and Baudelaire were to ridicule it in a manner which has yet to be surpassed. However, for the ordinary unsophisticated person, the belief in progress has only been in disrepute since the First World War; until then, it had been the pride and hope of civilized mankind. A few years before the First World War, there appeared two books by Georges Sorel, the French sociologist and philosopher, entitled *The Illusion of Progress* (*Les Illusions du progrès*) and *Reflections on Violence* (*Réflexions sur la violence*). Both books oppose the widespread belief that civilization had now progressed to such a point that it would dispense with violence. Sorel, however, had advanced beyond this "bourgeois" belief in progress. But despite his unconventional disbelief in the peaceful progress of civilization, it is undeniable that Sorel too, impressed by the Russian revolution, wished to move beyond the *status quo*.

That derision of the idea of progress which has become customary among the educated is just as shortsighted as the moral expectations which in an earlier period were aroused by scientific progress. It would be just as futile to deny that in the last hundred years technology and medicine, both based upon physical science, have made enormous progress as it would be to argue about whether or not the great literary works of the ancients surpass those of the moderns—since we do not recognize either as a standard but "interpret" both from a historically conditioned point of view. Scientific progress has not only realized, but far exceeded, the expectations of Bacon and Descartes in the seventeenth century, and of Turgot, Condorcet, and Comte in the eighteenth and nineteenth centuries. Our technically developed mathematical physics is not just one science among other sciences, but *that* science which for the past century has stamped and, what is more, continues to determine the total public existence of civilized mankind. Even those who no longer have *faith* in progress and would never make a religion of it make continual use of its actual advances, for they can neither do without them nor escape from their influence. There are no longer any blessed isles that progress

cannot reach. Nestroy made the famous remark that "in general, it can be said of progress that it appears to be much greater than it is in reality." But just the opposite seems to be true, i.e., that in general it can be said of progress that it is in reality much greater than it appears to be, but we scarcely notice progress any longer because we have become so accustomed to it.

The concept of progress referred at first to advances in science and art; the word *progrès* was used in its plural form. In Germany, the word *Fortschritt* came into use around 1750 alongside the older *Fortgang* as a translated term borrowed from another language. During the French Revolution, *progrès* became synonymous with *nouveauté*. The famous literary dispute, *querelle des Anciens et des Modernes*—the "quarrel of the ancients and the moderns"—in which Fontenelle in France, Swift in England, Vico in Italy, and Lessing in Germany took part, was decided in favor of the moderns because they had *progressed* beyond the ancients. For a long time France was the nation which marched in the forefront of progress.

In our own century, the idea of the West with its progressive civilization has been transplanted to America. Since America now has taken over the position of power which formerly belonged to Europe, it is quite simply considered to be *the West*. Russia has become the chief competitor of America since it has been progressively modernized through industrialization and scientific technology. In America, the idea of progress has always been dominated by the scientific positivism of August Comte; in Russia, by Marxism as "scientific socialism." However, both share a positivistic, scientific will-to-progress and a belief in the possibility of producing a better world even though, viewed historically, neither country is the source of this will-to-progress. Its origin can be traced to Europe and the European philosophies of history. And how decisive a belief in progress has been even for Marxist thought is shown in its criticism of the literary productions of the "bourgeois" world. The Marxist critic passes judgment on this literature from the simplistic standpoint of whether or not it is "progressive" or "reactionary." And in America, too, the word "progressive" is, in itself, a positive judgment of value.

This positive evaluation of progress became common from 1830 on, with the beginning of industrialization, for nothing was more in evidence than progress; for example, in social welfare and social security, in the struggle against epidemics, disease, and the high mortality rate, and in the spread of education and knowledge through compulsory schools and through newspapers

and magazines. A country in which a large percentage of the population is still illiterate, and in which sanitary conditions as well as electricity, telephone, and similar conveniences are still rare, is everywhere looked upon as backward. The number of schools in which reading and writing is taught, the huge editions of the daily newspaper, the greatest possible distribution of radio and television sets, the large editions of pocketbooks, and the Everyman's Library—*Rowohlt-Taschenbücher* in Germany—are all evidence of progress in the pursuit of increased knowledge and education. The same is true of economic conditions. A continually increasing number of consumer goods, which a few generations ago were looked upon as luxuries for a small but wealthy minority, have become available to all and are now regarded as universal necessities. What was originally a luxury is now an ordinary necessity, because the standard of living is rising continually, i.e., our expectations and demands are forcing it up. Within the very broad range that includes both education and economic conditions, progress is by no means an outmoded ideology or an illusion, but a historical fact of supreme significance.

The penetration of a country by scientific technology and industry and the progress which accompanies it changes everything very rapidly. The nations of East Asia are no exception. It is not accidental that social change in this part of the world is pursued under the banner of Marxian communism, for it is Marxist ideology which has introduced the concept of scientific and technical progress into these countries. Communism in the Orient means something quite different than it does in the West. Its affinities are with the revolutionary origin of the European labor movement. In the East, communism is the incarnation of progress, a sort of secular religion of progress. For centuries, the people of India, China, and Africa knew nothing about the radical and revolutionary demand for progress. But once progress is experienced, something is set in motion that cannot be stopped.

The demand for progress itself becomes progressive. This happened in the West; and now it is happening in the East. Nehru recognized this clearly, when he declared that progressive social change must come about quickly enough to keep alive the hopes that are bound up with it; the quicker the pace of progress, the better the prospects for reform. In this way, a sort of competition arises between actual progress and the progressive demand for such progress. Progress, in itself, has no limits; it is insatiable. The more progress we achieve, the more we demand and pursue. If it took twenty-five hours to fly from Frankfurt to New York a

few years ago and now it takes only six hours, then there is no reason why the flying time cannot be reduced still further in the near future. If the average life span can be extended from forty to sixty years, then why not from sixty to ninety years? And so it is with everything in which any sort of progress is possible.

Progress as a universal fact is not associated with just any science but with one particular one, with modern physical science as it arose in the seventeenth century and which, up to the nineteenth century, was regarded as the *only* science. Today, even more than then, it is regarded as the only science. Its methodological paradigm was Descartes' project for a universal science of mathematics that was intended to explain and to help us control the forces of nature. Similar to this, for Kant, was Newton's world-science [*Welt-wissenschaft*], as he called Newton's mathematical physics, which he considered to be the only genuine science. And for Comte, too, social science is thought of as *social physics* (*physique social*), while Pareto, in turn, followed Comte in his orientation towards natural science. If Hegel and Marx declared in the nineteenth century that the science of history is more inclusive and more fundamental than the physical sciences, then their inspiration—the inspiration of historical materialism, idealism, and of historicism in general—was the experience of the French Revolution. This is the experience that now man can “stand on his head,” because he can change the world in accordance with his own will.

In regard to this modern revolutionary concept of the history of humanity, it has been said with some justice that history has become for us the most urgent, universal, and serious problem. However, this supremacy of history only apparently contradicts the actual predominance of physical science. History has only become a pressing concern because of the advances of physical science which brought about radical changes in our historical existence. History has become an urgent problem within the last century just because scientific technology, and military technology in particular, have altered human relations at an extremely rapid rate. Modern physical science is a power which changes and destroys tradition; since it never ceases to move forward, it cannot leave things as they are. For us, history is no longer the occurrence of change within a world that has a stable natural order, but everything which, for us, *is the world* is drawn into the historical process. And since history is the opposite of all that is constant, enduring, and eternal, and since, in its modern

character, it transforms radically whatever exists, it is impossible to take a firm foothold in history from which to proclaim truths valid for all time.

What we scarcely still realize, because it has become so much a part of everyday life, is that the revolution of progress was originally a utopian program. Modern scientific technology had already been foreseen by some forward-looking thinkers of the late middle ages, in particular by Roger Bacon, a Franciscan monk of the thirteenth century. In his thought, alchemy and astrology were strangely blended with mathematics. Both magic and mathematics, he felt, should be used to manipulate nature in such a way that it could be controlled for the benefit of man. He himself had already projected a sort of experimental science, whose results could be used practically for the transformation of elemental natural forces. The word "experiment" at that time meant a magical action by means of which power might be gained over man and nature. For example, Bacon conceived of automatic ships, airplanes, and submarines that would strengthen the power of man and unleash the hidden powers of nature. His ultimate aim was the utility of science for mankind. Science, for him, was no longer the *theoria* of Aristotle, i.e., knowledge for the sake of knowledge; instead, science was to be cultivated because of its practical usefulness, just as the aim of the experiments of the alchemists was to produce gold for the use of man. Although the concept of progress which lay at the basis of this experimental science had its origin in alchemy, its tendency, nevertheless, was modern, for it sought to establish the superiority of the "secular" sciences over theology. Roger Bacon argued for this superiority on the grounds that only "secular" science could bring about practical improvements and progress. All this was done in the service of the church and under instructions from Pope Clement IV. It was hoped that the new experimental science would serve the Pope's desire for world-dominion at a critical time for the church, when the Mongolian hordes invaded the Christian world.

Roger Bacon was convinced that a universal Christian state could only be established by means of this new scientific and technical mastery of the world. He proposed to the Pope the substitution of the mission of science for the traditional foreign mission of preaching, because only an efficient science could make people accept the truth of the Christian faith. He conceived of means of destruction, such as gunpowder, which he already knew how to produce, and the invention of burning reflectors

that could be used to destroy any hostile army at great distances. He also imagined other special materials that would do away with non-Christian enemies. At the same time, he took care in his projects that these means of annihilation and of "miraculous utility" (*mirabilis utilitas*) would spare the lives of righteous believers. In his opinion, Saint Louis might succeed in his Crusades if he would go into the Holy Land with the burning reflectors mentioned above and with some technical experts. He even based his experimental science on a passage from the first book of Moses where it is written that God created man in his own image that he might make the earth subject to him. But he also referred to the myth of Prometheus, whom he called a "great scholar" and a "philosopher."

Christopher Columbus, who lived during the fifteenth century, was a Prometheus of the Christian world. Like Roger Bacon, he still lived within the magic-hermetical sphere of the Middle Ages, fearfully waiting for the break of Doomsday and at the same time passionately seeking the gold of the new world which he supposed to be somewhere near Japan. His belief that he could reach India by sea, which resulted in his accidental discovery of the New World, was based upon certain arguments of Roger Bacon and also upon Josaiah's prophecy of a new Heaven and new earth. He also considered his daring enterprise to be a Christian mission. The seamier side of this missionary zeal was the promise made to the Spanish king that he would enslave the natives and deport them to Spain at the same time that he announced the discovery of gold. Two years later, Pope Alexander VI issued an edict drawing a line from the North Pole to the South Pole in order to separate the Spanish and Portuguese spheres of interest.

A century later, Francis Bacon, the philosopher and statesman, wrote his utopia, *Nova Atlantis*. This, along with his other famous work, *The Advancement of Learning*, set forth a program for scientific progress whose aim was "proficiency" in the betterment of human life. The motto of his utopia was *scientia et potentia in idem coincidunt*: knowledge and power are the same. The greater the extent of our knowledge, the greater our power over nature. With this motto Bacon provides the key to the development of the modern world up to the present time. Theoretical speculation is only one part of science; Bacon wanted to make science more practical and efficacious in its application for "the kingdom of man." Through science, man must subject nature to transformations whose purpose is to change the world by continually

improving it. In this respect, Bacon compared himself to Columbus, as the title, *Nova Atlantis*, already reveals. The goal which he formulated for his program was to produce as much as possible, artificially, through the transmutation of elements, the production of artificial materials, and, finally, the discovery of the elixir of life. Bacon's project has become reality. Today, we accelerate the blossoming of plants, increase the size of fruits and animals, develop new species, and crossbreed old ones. We practice vivisection and experiment on animals with poisonous substances; through artificial means, we kill and bring to life again; we produce giants and dwarfs; we sterilize, desterilize, and breed artificial deformities. And in the scientific industrial plants of Bacon's utopia, there are already meteorological stations, cold-storage depots, weatherchambers for the treatment of the sick, hydraulic power plants, skyscrapers, heating apparatus, and even artificial remedies for obesity and malnutrition.

The practical science outlined by Bacon came to be an independent mathematical physical science in the seventeenth century through Descartes, Galileo, and finally Newton. The essential significance of this period is that mathematical physics was finally set free, that is, it was disengaged from everything that was not mechanically and quantitatively determinable. This separation led to the divorce of nature and natural science from the life of the universe and all questions of theology and morality. For the first time, the natural world was transformed from a partner into an object that can be manipulated through calculation and experiment for the purpose of *utilitas* and *potentia*.

Kant was the first philosopher to reflect clearly on the new situation which had been created by physical science. He acknowledged unconditionally that the world had been conquered by an objectifying science, but he recognized too that it explained neither biological phenomena nor the human being as a moral person. Thus, he drew a distinction between theoretical and practical reason and sought the ground of the genuinely human sphere in moral postulates, not in the theoretical knowledge of science.

Only Goethe revolted against the dichotomy between man and nature and against modern physics. The central theme of *Faust* is the problem of the Promethean will to technical mastery of the world. He, Goethe, foresaw that with the nineteenth century an era had begun whose dominant tendency was progress toward more power, greater wealth, and increasing speed—toward what he called "*das Veloziferische*." In 1825, in a letter to Zelter, he wrote:

Everything nowadays is *ultra*, everything is being transcended continually in thought as well as action. No one understands himself any longer; no one can grasp the element in which he lives and works or the materials that he handles. . . . Young people are stirred up much too early in life and then swept along in the confusion of the times. Wealth and speed amaze the world and it is these that all are striving for. Railroads, steamers, all the possible means of communication are the sort of things that the civilized world seeks but it only becomes over-civilized and thus persists in its mediocrity. This is also the effect of dispersion, of the fact that an average culture has spread out and become a common culture. It is the century of clever practical men who have a certain limited talent and feel superior to the masses, although they themselves have no higher gifts.

At the end of the last edition of his works, Goethe affixed his poem "Pandora" in which Prometheus and Epimetheus symbolize the discord of the time to come. Epimetheus is the prototype of the visionary, the reflective and ascetic man who still experiences the world as a "cosmos." Opposed to him stands Prometheus, the prototype of Faust, the man who is constantly planning and acting, the man for whom everything is useful, the *homo faber*.

The *fatefulness* of this progressive development lies precisely in what seemingly justifies it in its colossal *success*. The path of the revolution that now covers the earth with a technical super-world of industries and traffic centers, which multiplies continually the size of the population, and now makes it possible to hear, speak, see, and speed around the world in a matter of seconds, has led from the kinetic theory of gases to the steam engine, and from quantum theory to the splitting of the atom. Because of the incredible advances made possible by scientific progress, the physicist has taken the place of the theologian; planned progress has taken over the function of Providence. The vision of the Franciscan, Roger Bacon, of the Christian mission of natural science, has been realized in an unchristian manner and the original optimism about progress has given way to a fatalism.

Within one generation, two world wars have shaken the self-confidence of the eighteenth- and nineteenth-century belief in progress, and have awakened us to a consciousness of the total forces that are at work in the midst of all this rational planning and foresight. Otto Hahn, the discoverer of nuclear fission, sees an analogy between atomic physics and primitive magic, which he described in a work significantly entitled *Modern Alchemy*. "If we still understand alchemy today as the artificial transmutation of one element into another, then perhaps we can justly characterize the natural scientists of the present century as the true

alchemists." In fact, modern physics is not only concerned with the artificial transformation of elements into other elements, but also with the synthetic production of elements that cannot be found in nature at all. To this, which a generation ago would have been considered inconceivable, must be added the breakthroughs in the areas of the immeasurably small and immeasurably large which go far beyond the old program of progress, because they not only render usable a nature that is given to man, but also create a new world of artificial forces. This acceleration of scientific progress is paralleled by the progressive alteration and dissolution of the old European traditions in religion, morals, politics, and social life. The two world wars stimulated new inventions which, in turn, have had political repercussions. What was once "utopian" has now been realized, and the only "problem" which still remains is how to transform man so that he can come to terms with his own inventions. Thus, Nietzsche's lament that man has become "homeless" is already obsolete, for we are at home nowhere precisely because we can be anywhere and everywhere. Man is now able to put himself in a metal capsule that can go around the earth and return within a short time.

Promethean man now knows that unusual and radical efforts are needed if he is not to be destroyed by the forces that his own productivity has unleashed. Over a century ago, Marx had already grasped this problem under the notion of "self-alienation," which became the central concern of his thought. In sharp contrast to Marx's clear understanding of the anti-religious character of modern scientific progress, Catholic and Protestant theologians have attempted to convince themselves and their flocks that these progressive developments are God's will, as if the Vatican radio transmitter were something like the miracle of Whitsuntide. The stage in the utilization of natural forces through technological science which is now beginning is the atomic age. When the first atomic bomb was dropped, the dilemma of progress became inescapable.

Within the area of nuclear weapons, the effect of scientific progress has been that each nuclear power fears the other as a potential enemy that may be advancing too quickly and this fear then stimulates a mutual competition for further nuclear "progress." The history of the production of nuclear weapons, which Robert Jungk describes in his book, *Brighter Than a Thousand Suns*, gives a telling description of a sort of schizophrenia on the part of responsible scientists and politicians. After having invented this miraculous weapon and after the first atomic bomb was

dropped on Japan, the physicists placed the responsibility for it on the politicians, while the technicians and military men who carried out the mission held the physicists responsible for having invented it. However, after these temporary pangs of conscience passed, most of America's nuclear physicists returned to their national institutes for research and continued experimenting, thereby making use of the millions of dollars they received in grants from the armed forces and federal government.

But even this situation is not as novel as it appears. Alfred Nobel, the inventor of the most disastrous, destructive material of his time, was the prototype, so to speak, of this kind of schizophrenia. Nobel hoped that through the production of dynamite, no one would make war in the future. After his hope came to nought, he went into self-imposed exile. Shortly before his death, he established the Nobel Prize, which is granted both for endeavors in the advancement of world peace and for scientific discoveries which make possible the most radical sort of destruction.

Caught up in the race between progress and annihilation in 1955, eighteen Nobel Prize winners from all parts of the world professed their *allegiance to science* on one hand, but confessed on the other to their helplessness in the face of the possible consequences of unlimited scientific progress. Just as in Aeschylus' drama, *Prometheus Bound*, the Promethides exchanged the vision of the future that was denied them for the most deceptive of all the gifts of Prometheus—blind hope—so the appeal of these atomic physicists was inspired by the same blind hope that all nations would voluntarily decide in favor of a renunciation of force. However, fear of the final outcome is concealed by the vision of enormous peaceful advances and benefits. An uncanny coincidence of fatalism and a will to progress presently characterizes all contemporary thinking about the future course of history. Progress now threatens us; it has become our fate.

The question which now confronts us is this: is there any way to moderate this progress, which in itself is so lacking in moderation, or is it inevitable that *man will do everything and anything that he is able to do*? Are there any bounds to the freedom for everything and nothing? At this crucial point, modern post-Christian thought—which no longer accepts biblical religion, but still maintains, in the Christian tradition, that the world has been created for man—diverges sharply from Greek thinking as expressed in the myth of Prometheus. A reflection on the myth of Prometheus can be very revealing. Man received the *gifts* of Prometheus—and these are the gifts of man as such which set

him apart from gods and beasts—*together with their dangers*. A naked worship of technology was unknown to the Greeks. Prometheus, to be sure, frees mankind with fire stolen from the gods, but he does not redeem man; in fact, he is himself punished and put in chains by Zeus. And we who now stand at the end of this original rebellion, an end which we call the beginning of the atomic age, are also *set free* and yet *imprisoned* by our own power. The optimism that surrounded the idea of progress in the eighteenth and nineteenth centuries did not foresee that freedom can also enslave. And if a century ago Comte prophesied that the progress of science and industry would make vast destructive wars in the future impossible, so it is just the reverse for us, for from being optimists about progress, we have become fatalists. Progress itself goes on progressing; we can no longer stop it or turn it around—a state of affairs which sheds a remarkable light on Hegel's thesis that history is the history of a progressive realization of freedom.

In the cult of Prometheus, the Greeks atoned for the theft of the heavenly fire in the myth of the chained Prometheus, because they felt deeply that this theft had provided man with a power which must be kept within the strictest limits if it were not to destroy him. The myth reveals a holy awe in the face of every assault upon the powers of nature, upon the physical cosmos which the Greeks regarded, in sharp contrast to human powers, as something divine. All such awe seems now to have vanished.

In the present age, we live in a mixture of amazement at the technical progress which we are making and anxiety in the face of its success. We experiment freely; we calculate everything that can be calculated, and we do everything that can be done. From mythical prehistoric times to the end of the Middle Ages, every such inventive assault was accompanied by religious ceremonies and sacrifices which dispelled the powers which had been conjured up. The same sort of thing took place with the founding of every Greek city-state—a violation of the sacred earth—and with every ship that was put to sea. One relic of these sacrificial customs which is misunderstood, for the most part, is the smashing of a bottle on the bow of a ship ready to sail; and another, the ribbons put on the top of a newly built house. But, it cannot even be said that the attitude of modern physical science toward nature is sacrilegious, because it is without awe. Sacrilege would presuppose that the world of nature, the physical cosmos, is something higher than man, something sacred and divine, and not just a relational system of quanta of energy that

can be represented in mathematical equations. And as long as we do not fundamentally revise our entire relation to the world, but still assume, in the tradition of the biblical story of creation and the Christian roots of modern physical science, that the world of nature is there *for man*, then it is hard to envisage any possible change in the dilemma of progress.

As we noted above, progress is only possible in a time that is essentially oriented toward the future. There is neither development nor progress in an everlasting present. In contrast to the classical and literal sense of the word "history," however, it is characteristic of the modern historical consciousness that it is thoroughly drenched by the sense of the future and in consequence lives both in fear and hope. The will to progress is kept alive by expectations for the future. The decisive question, therefore, in regard to our being as it exists in the future, is whether the time of the world is a perpetual and everlasting time, in contrast to the finite and mortal time of man. It is difficult to see how we could conceive of finite time, if we exclude the possibility of an eternal time. Nevertheless, the idea of progress would lose the significance it has for us if there were something like an everlasting universal time in which new things are continuously created and old things pass away. The gravity and immense significance of the problem of progress today springs precisely from the fact that we know of nothing which lasts forever.